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ABSTRACT

This publication is the result of the Illinois Annual Agriculture Articulation Conference of 1977. It consists mainly of introductory course descriptions for college courses in agriculture. The intent of the publication is to improve articulation between two and four year colleges and universities in Illinois that offer agriculture degrees. The introductory courses outlined here are designed to be taken by agriculture majors in the freshman and sophomore years at all state and community colleges and universities. These courses include agricultural economics, agricultural education, agricultural mechanization, animal science, crop (plant) science, horticultural science, and soil science. Each course outline lists course credits, prerequisites, objectives, texts, and topics with suggested time schedules in periods. (HR)

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STATEWIDE ARTICULATION IN INTRODUCTORY COURSES IN AGRICULTURE

Prepared by
REPRESENTATIVES OF
ILLINOIS PUBLIC COMMUNITY COLLEGES AND
STATE UNIVERSITIES
Revised June 1, 1977

Illinois Community College Board
518 Iles Park Place
Springfield, Illinois 62718
Phone: (217) 782-2495

June, 1977
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PREFACE

As early as 1957, the four four-year Illinois agriculture colleges and Joliet Junior College recognized the need for agriculture articulation through annual meetings. The first of these continuous annual conferences was held on the University of Illinois Campus. Soon after the passage of the Illinois Community College Act in 1965 and the rapid emergence of many new public junior colleges, problems began to appear in the articulation of courses in agriculture between two and four year colleges in Illinois.

In cooperation with the office of the Illinois Community College Board, several leaders discussed this matter and it was agreed to sponsor a statewide conference which would address itself specifically to these curriculum problems. A planning committee composed of Dr. C. D. Smith, Assistant Dean of College of Agriculture at the University of Illinois; Dr. Harvey S. Woods, Chairman of Agriculture Department at Illinois State University; Dr. Thomas E. Deem, then Dean of Arts and Sciences at Lake Land College; Mr. William Martinie, Chairman of Agricultural Occupations at Illinois Central College; and Dr. G. Robert Darnes, Associate Director, Illinois Community College Board, met in Normal to identify problems and to make preliminary plans for such a meeting. This Statewide Articulation Conference in Agriculture was held March 20-21, 1969.

As the introductory chapters will testify, detailed articulation patterns have been developed between the two and four year institutions in agriculture. The office of the Illinois Community College Board was pleased to have assisted in this planning effort. This bulletin, published by the Illinois Community College Board, is a summary of those deliberations.

In preparing the FOREWORD, Dr. Frank P. Gardner, Dean of the School of Applied Sciences at Western Illinois University, served as the editor. For developing the first chapter - PROGRESS AND ARTICULATION OF AGRICULTURE, Dr. Frank P. Gardner and Dr. Cecil B. Smith, Assistant Dean of the College of Agriculture at the University of Illinois, compiled this information and served as editors.

Although the statewide agricultural organization is rather an informal one, its deliberations have been very productive and have been accepted by all agricultural personnel at both two and four year institutions. This group has given outstanding leadership in the State of Illinois for statewide curriculum planning. The technique for successful achievements developed and accepted by this organization has served as guidelines for not only other subject areas within the state but also for other states.

Representatives from both two and four year institutions have continued to meet and this revision is the result of deliberations of the 1977 Illinois Annual Agriculture Articulation Conference.

Dr. G. Robert Darnes
Associate Director
Illinois Community College Board

Dr. Fred L. Wellman
Executive Director
Illinois Community College Board

FOREWORD

The rapid development of the public comprehensive community college system in Illinois has brought unparalleled opportunities in higher education to its citizens. Thousands can now avail themselves of post-high school education who otherwise would have found it difficult if not impossible.

The admission of transfer students from a community college to a four-year institution is more complex than that of entering freshmen. Transfer students enrolling in programs at senior institutions offering degrees in Agriculture submit a transcript of academic credits earned at the institution they attended previously. The number of credits they have earned in Agriculture college parallel courses varies depending upon the community college attended.

In 1970, 23 community colleges in Illinois offered programs in Agriculture. All 23 of these schools offered occupational training and some 15 community colleges offered baccalaureate-oriented courses in Agriculture. Most of the students in these courses plan to transfer to a senior institution in Illinois (University of Illinois at Champaign-Urbana, Southern Illinois University at Carbondale, Illinois State University, and Western Illinois University) or in other states.

Articulation between two and four year institutions is essential in the system of higher education in Illinois. With 50 public community college campuses in Illinois from which lower division (freshman and sophomore) credits may be obtained, and four senior institutions offering baccalaureate programs in Agriculture, the complexity of the problem is readily apparent, and the importance of close coordination and cooperation between the institutions offering programs in Agriculture is extremely important. Ideally, effective articulation occurs when a student who has been pursuing a college parallel program in a community college, and does not change his major or objective, can transfer to a four year college with a minimum or no loss of credit. The outlines of introductory courses in Agriculture provided herewith have been adopted by all community colleges and senior institutions in Illinois offering Agriculture and are evidence of the liaison and articulation that has occurred.

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CHAPTER I

PROGRESS IN ARTICULATION IN AGRICULTURE

Historically, serious efforts on a formal basis to improve articulation in Agriculture between the two- and four-year institutions in Illinois began with a conference held at Southern Illinois University in 1966. Representatives from Joliet, Canton, and Wabash public community colleges and the University of Illinois, Southern Illinois University, Illinois State University and Western Illinois University senior institutions were in attendance. The primary consideration of the conference was concerned with the qualifications of community college teaching staff. Responses from the conferees indicated that the instructor should hold a Master's degree in the subject matter taught.

The 1967 conference on Articulation in Agriculture gave primary attention to the role of public community colleges, stressing the occupational and continuing education function as well as the baccalaureate function.

By the time of the 1969 conference, held at Illinois State University, Normal, it was apparent that more specific guidelines for offering and accepting transfer course credits in Agriculture were needed. The major question at that time was "What courses in Agriculture should be taught during the first two years of a baccalaureate degree and, what should be the content of such courses?" The consensus was that certain courses in Agriculture could be offered during the first two years to motivate and hold the student's interest in Agriculture. This philosophy contrasts with that of those who advocate that students in baccalaureate programs in Agriculture should take only general education courses at the community colleges, then transfer to the senior institutions for courses in their area of specialization.

At this conference agreement was reached on the question of what courses might be offered during the first two years. Five introductory courses in the following areas were agreed upon: Agricultural Economics, Agricultural Mechanization, Animal Science, Plant or Crop Science, and Soil Sciences. There was unanimous agreement that these were the courses most suitable at the freshman or sophomore level. A sixth course, Feeds and Feeding, or Animal Nutrition, was suggested by the junior college representatives, but senior college representatives maintained that it belonged at the upper division.

Also at this same conference it was agreed that in order to enhance articulation and to assure successful advancement to the specialized courses at the senior institutions, topical outlines should be developed for use by all institutions offering or interested in offering any of the five introductory courses. The students could therefore elect to enroll in any of these courses and be assured of their transferability.

These agreements did not imply that all community colleges would offer all or any of the five courses. Local conditions such as funding, staff, and facilities would naturally be a consideration.

This revised edition is the result of the efforts of standing committees and annual conferences on Agriculture curriculum in both two- and four-year institutions.

CHAPTER II

COURSE OUTLINES

INTRODUCTORY AGRICULTURAL ECONOMICS

INTRODUCTORY AGRICULTURAL EDUCATION

INTRODUCTORY AGRICULTURAL MECHANIZATION

INTRODUCTORY ANIMAL SCIENCE

INTRODUCTORY CROP (PLANT) SCIENCE

INTRODUCTORY HORTICULTURAL SCIENCE

INTRODUCTORY SOIL SCIENCE

INTRODUCTORY AGRICULTURAL ECONOMICS

Credit: 3 or 4 semester; 4 or 5 quarter — No Prerequisite

Objectives:
1. To develop a basic understanding of the principles of economics and their application to agricultural problems.
2. To develop an understanding of the role of agriculture in the United States and world economies.

Suggested Text: Snodgrass and Wallace, Agriculture, Economics, and Resource Management.

Alternative Text: Sjo, John, Economics for Agriculturalists.

Topics	Periods
I. Economics and Economic Growth	3
II. Principles of Economics	15
A. Production Principles	
B. Production Costs, Supply and Revenue	
C. Principles of Profit Maximization	
D. Principles of Consumption and Demand	
E. Price Elasticity Concepts	
F. Principles of Market Price Determination	
III. Agricultural Inputs	5
A. Natural Resources	
B. Human Input	
C. Capital	
IV. Marketing Agricultural Products	4
A. How the Marketing System Developed	
B. Functional, Institutional and Commodity Approaches to Marketing	
C. Costs of Marketing Agricultural Products	

V.	Agricultural Problems and Policies	6
	A. Goals of Policies and Programs	
	B. Price and Income	
	C. Resource Use	
VI.	World Food Situation	5
	A. Population Growth	
	B. World Food Production Trends	
	C. Trade in Agriculture Products	
	D. The Role of Agriculture in Economic Growth	
VII.	Characteristics of Agriculture	2
	Total	40
	Range	40 - 50

Committee for this course (1977):

James S. Wehrly, Chairman	Western Illinois University
William A. Bennett	Black Hawk East
Ralph A. Benton	Black Hawk East
Lyle P. Fettig	University of Illinois
Larry L. Fischer	John Wood Community College
Ronald W. Heisner	Kishwaukee College
Bruce W. Henrikson	Parkland College
William B. Johnson	Joliet junior College
Donald M. Nelson	Parkland College
Bill L. Rich	Lake Land College
Cecil D. Smith	University of Illinois
Rodney L. Winter	Black Hawk East
Harvey S. Woods	Illinois State University

INTRODUCTORY AGRICULTURAL EDUCATION

Credit: 2 or 3 semester; 3 to 4 quarter — No Prerequisite

Purpose: The general purpose of the course is to enable the student to understand the vocational teaching profession and the role of the teacher.

Objectives: At the close of the course, the student will be able to:

1. Present an agriculture occupations total program.
2. Determine the teacher's role and responsibility in an educational system.
3. Assess the opportunities in the teaching profession.

Text and Suggested References:

Text: Phipps, Lloyd J., Handbook on Agricultural Education in Public Schools, Interstate Publishing Co., Danville, IL.

References:
Agricultural Education Magazine
A.V.A. Journal
Ill. F.F.A. Magazine
Career Journal
IVA Informer
National F.F.A. Magazine
Official F.F.A. Manual
F.F.A. Advisors Handbook
F.F.A. Student Handbook
Other professional journals

Special Activities:

1. Field Trips to local high schools, secondary, area vocational centers and community colleges.
2. F.F.A. Contest and Award Programs.
3. Resource persons - such as a successful agriculture teacher and F.F.A. officers.
4. Mini-teach a unit.

Topics

I. Need and Objectives for Vocational Education in Agriculture

II. Vocational Teaching as a Career

III. Scope of Vocational Education

- A. Service Areas
- B. Legislative Acts

IV. Job Opportunities in Teaching and Related Areas

V. Community School Concept

VI. Responsibilities of a Teacher of Agriculture

VII. What Makes a Good Teacher

VIII. The Total Program of Vocational Agriculture Education

A. K - 8

B. High School Program (9 - 12)

C. Post Secondary (13 - 14)

D. Adult Education

IX. F.F.A. Programs

X. Facilities and Equipment

XI. Instructional Methods and Materials

XII. Vocational Guidance (Careers)

XIII. Issues and New Developments in Vocational Education

Qualifications of Instructors

The qualifications of the instructor of any course to be accepted should be:

1. B.S. degree in Agriculture with certification to teach high school Vocational Agriculture (Agricultural Occupations).
2. Three (3) years experience in high school teaching of Agricultural Occupations.
3. Masters degree in Agriculture with specialized training for teaching.

Committee for this course (1977):

William M. Martinie - Chairperson	Illinois Central College
Robert D. Cottingham	Joliet Junior College
Eldon R. Aupperle	Black Hawk College, East
Rollan R. Bonneau	Kishwaukee College
Max H. Kuster	Joliet Junior College
G. Donovan Coil	University of Illinois
Kenneth E. James	Illinois State University
Paul E. Hemp	University of Illinois
Eugene S. Woods	Southern Illinois University - Carbondale
Brian G. Telander	Spoon River College
Bill L. Rich	Lake Land College
Paul E. Curtis	Parkland College
H. Edward Breece	Western Illinois University

INTRODUCTORY AGRICULTURAL MECHANIZATION

Credit: 3-4 semester; 4-5 quarter — **No Prerequisite**

Objectives:

1. To provide an introduction to:
   a. Agricultural Power and Machinery
   b. Agricultural Electrification and Application
   c. Agricultural Structures
   d. Soil and Water Conservation
2. To develop basic skills using:
   a. Surveying equipment
   b. Drawing instruments
   c. Measuring devices
   d. Electrical wiring
3. To develop abilities in mathematical applications (solving technical problems in a logical and legible manner).
4. To provide opportunities for motivation of student interest in agricultural mechanization.
5. To develop a vocabulary of agricultural mechanization principles and applications.

Suggested Text: Engineering Applications in Agriculture, Bowers, Jones, and Olver.

Suggested Auxiliary Texts or References:

1. Practical Farm Buildings, James Boyd.
2. Farm Field Machinery, Marshall Finner.
3. Selected FOS and FOM manuals by Deere and Co.

Topics	Periods
I. Agricultural Power and Machinery	10 - 16
A. Engines	
B. Power Transmission to include Hydraulics	
C. Tillage Machinery	

D. Calibrations

E. Harvesting Equipment

II. Agricultural Electrification and Application 10 - 16

A. Circuits

B. Motors

C. Controls

D. Materials Handling and Processing

III. Agricultural Structures 10 - 16

A. Sketches and Drawings

B. Loads

C. Construction Materials

D. Layout and Design

IV. Soil and Water Conservation 10 - 16

A. Surveying and Mapping

B. Conservation Structures

1. Erosion Control

2. Reservoirs

3. Drainage

4. Irrigation

Committee for this course (1977):

Dwight Mobley, Chairman	Wabash Valley College
Donald Moudy	Kishwaukee College
Donald Whitten	Lincoln Land Community College
Cletus Mitchell	Kankakee Community College
E. F. Olver	University of Illinois
William A. Doerr	Southern Illinois University--Carbondale
Harold Gates	Kishwaukee College
Lanny Anderson	Black Hawk College East
Brian Telander	Spoon River College

INTRODUCTORY ANIMAL SCIENCE

Credit: 3 or 4 semester; 4 or 5 quarter — **No prerequisite**

It is recommended by the articulation committee that the maximum semester or quarter hours be included in the course.

Objectives:

1. To demonstrate the application of the science of genetics, physiology, and nutrition to the improvement of the animal industries.
2. To acquaint the student with the management and production practices of these industries
3. To familiarize the student with the products of these industries and their contribution to mankind and his environment.

Suggest Texts: Campbell and Lasley, The Science of Animals That Serve Mankind - 2nd edition

H. H. Cole and Magnar Ronning, Animal Agriculture

Topics	Periods
I. Introduction	2 - 4
A. Scope and importance	
B. History, growth, and development of the animal industries	
C. Careers and opportunities	
II. Breeds	1 - 3
Beef, Dairy, Horses and other companion animals, Poultry, Sheep, and Swine	
III. Breeding and Selection	7 - 9
A. Principles of genetics	
B. Selection systems	
C. Improvement program	
D. Mating systems	
IV. Anatomy and Physiology	8 - 10
A. Skeletal and muscular systems	
B. Respiratory and circulatory systems	

C. Endocrine systems

D. Reproductive systems

1. Male

2. Female

a. Milk secretion

b. Physiology of egg laying

E. Digestive system

V. Nutrition 7 - 9

A. Nutrients and food analysis

B. Requirements

C. Feedstuffs

VI. Growth 1 - 2

A. Measurements of growth

B. Factors affecting growth

VII. Environment 2 - 4

A. Temperature

B. Humidity

C. Light

D. Space

E. Adaptation

VIII. Health and Sanitation 3 - 5

A. Sanitation Program

B. Disease Control Program

C. Parasite Control Program

D. Public Health

IX. Product 8 - 10

A. Meat

B. Milk

C. Eggs

D. Wool

X. Marketing 2 - 4

A. Systems

B. Grading and Classification

XI. Production, Technology, and Economics 4 - 6

A. Performance standards

B. Livestock enterprises

1. Contract farming

2. Vertical integration

3. Independent farming

C. Enterprise Cost Analysis

It is recommended by the committee that an increased number of masters degrees or equivalent instructors in animal science be used to instruct the Introductory Animal Science course.

Committee for this course (1977):

John W. Litchfield, Chairman	Kishwaukee College
Paul C. Harrison	University of Illinois
Howard H. Olson	Southern Illinois University-Carbondale
Loren K. Robinson	Western Illinois University
Dan E. Hoge	Black Hawk College East

INTRODUCTORY CROP (PLANT) SCIENCE

Credit: 4 semester or 5 quarter — No Prerequisite

Objectives:
1. To develop an appreciation of the importance of crops on world food production.
2. To develop an understanding of the basic principles of plant growth and the influence of man and the environment.
3. To develop an appreciation of the theoretical and practical application of Agronomic principles.
4. To be able to interpret and apply scientific data.

Suggested Texts:
Martin and Leonard, Principles of Field Crop Production

Burger, Lab Studies in Field Crop Science

Janicks, et al, Plant Science - An Introduction to World Crops

Delorit and Ahlgren, Crop Production

Leopold, Plant Growth and Development (Series in Psysiology)

Peter M. Ray, The Living Plant

Arthur W. Calsoton, The Green Plant

Topics	Periods
I. Importance of Crop Plants - Food, Feed, Fiber, Shelter and Aesthetic	2 - 4
A. World food and population outlook	
B. Contribution	
1. To man and his welfare	
2. To GNP	
3. To state gross product	
4. To balance of trade, etc.	
C. Historical significance	
D. Economics	
1. Social	
2. Comparative advantages	
3. Markets	

4. Transportation

5. Population

II. Origin, Classification, Distribution and Identification 4 - 6

A. Theories of origin

B. Classification

C. Distribution

D. Identification of seeds and vegetative plants

III. Factors of Crop Growth and Distribution 4 - 6

A. Environmental

1. Gasses

2. Light

3. Moisture

4. Temperature

B. Edaphic

1. Physical

2. Chemical

3. Biological

IV. Growth and Development of Crop Plants 4 - 6

A. Botany of plants

1. Anatomy

2. Morphology

B. Physiology

1. Structure

2. Function

C. Growth regulation and development - plant regulators in Agriculture today and in the future

V. Ecological Physiology 4 - 6

A. Mineral, water and CHO nutrition

B. Role of water

C. Water Management

D. Essential elements

E. Photosynthate and storage

VI.	Crop Propagation	4 - 6
	A. Asexual propagation - vegetative	
	B. Sexual propagation - seed	
	1. Seed quality	
	2. State laws	
	3. Crop Improvement Association (Certified Seed)	
	C. Stand establishment - seeding methods, etc.	
VII.	Cropping Systems and Practices	2 - 4
	A. Monoculture	
	B. Rotation	
	C. Double Cropping	
	D. Orchards, Forests, etc.	
VIII.	Preparation and Tillage of Growing Medium	2 - 4
	A. Preparation of Seedbed	
	B. Cultural practices	
	C. Minimum-tillage	
	D. Zero-tillage	
	E. Other rooting media	
IX.	Crop Improvement	2 - 4
	A. Introductions	
	B. Selections	
	C. Genetics	
	D. Breeding	
	E. Hybridization	
X.	Crop Protection	2 - 4
	A. Insects	
	B. Diseases	
	C. Weeds, etc.	
XI.	Harvesting, Storing and Marketing Practices	2 - 4

XII. Other Important Crops of the World 1 - 3

A. Fiber

B. Oil

C. Grain

D. Drug

E. Forage

F. Sugar, etc.

Laboratory suggested: Use of live plants or a series of demonstrations from seed to seed development.

Example: Seed identification and vegetative identification of crops.

Seed germination experiments.
Factors affecting seed germination.

Emergence and seedling development of monocots and dicots.

Morphology of Grasses.

Morphology of Legumes.

Fertilization and Seed Formation

Committee for this course (1977):

Garry E. Greenwood, Chairman	Lewis and Clark Community College
Farrell J. Olsen, Vice Chairman	Southern Illinois University - Carbondale
Roland G. Pettit, Vice Chairman -	Spoon River College
Donald O. Mersinger	Wabash Valley
Darrell A. Miller	University of Illinois
David T. Nolan	Black Hawk College, East Campus
G. Kyle Wittler	Parkland College

INTRODUCTORY HORTICULTURAL SCIENCE

Suggested course description: An introduction to the principles and practices involved in the development, production, and use of horticultural crops (fruits, vegetables, greenhouse, turf, nursery, floral, and landscape).

Credit: 3 semester or 4 quarter hours — No prerequisite

Objectives:

1. To develop an awareness of the significance of horticulture to mankind.
2. To provide the student with a working knowledge of the fundamental principles of plant growth.
3. To develop the ability to apply the fundamentals to the solution of practical problems in horticulture.

Suggested Texts:
Janick, Horticultural Science
Denisen, Principles of Horticulture
Benisen and Nichols, Laboratory Manual in Horticulture
Edmond, Senn and Andrews, Fundamentals of Horticulture

Topics	Periods (without labs)
I. Introduction	2 - 4
A. Scope and Importance	
B. Historical perspective	
C. Careers and opportunities	
II. The biology of Horticulture	8 - 10
A. Classification of horticultural plants (Botanical, Horticultural, Ecological, etc.)	
B. The structure of horticultural plants	
C. Plant growth and development	
D. Environmental factors affecting plant growth and development (light, temperature, nutrient supply, moisture, atmosphere)	
III. The technology of horticulture	16 - 20
A. Controlling the plant environment	
B. Directing plant growth	
C. Biological competition	
D. Mechanisms of propagation	

	E. Plant improvement	
	F. Harvesting and marketing	
IV.	The industry of horticulture	8 - 10
	A. Horticultural geography	
	B. Horticultural enterprises	
	C. Esthetics of horticulture	
V.	Examinations	3 - 4
	Total	37 - 48

Committee for this course (1977):

Chester C. Zych, Chairman	University of Illinois
Robert D. Cottingham, Secretary	Joliet Junior College
Fred Barber	Belleville Area College
Alice Dries	Danville Junior College
Jack B. Gartner	University of Illinois
Gerald D. Coorts	Southern Illinois University - Carbondale

INTRODUCTORY SOIL SCIENCE

Credit: 4 semester or 5 quarter

Prerequisite: 1 course in Chemistry. Geology Suggested.

Objectives:

1. To develop an understanding and knowledge of the basic and applied chemical, physical and biological concepts in Soils.
2. To develop an understanding of the origin, classification, and distribution of soils and their relationship to man and food production.
3. To develop an understanding of the management and conservation of soils.

Suggested Texts:

Foth, Fundamentals of Soil Science, 4th. ed., Wiley

Brady, The Nature and Properties of Soils, 8th. ed., McMillan

J. J. Hassett, W. L. Banwort, Stipes, Palmer and Troeh Introductory Soil Science Laboratory Manual, 2nd. ed., Iowa State

Topics	Periods
I. Introduction	2 - 3
A. Definition of soil	
B. Soil as a natural body	
C. Soil components - air, water, inorganic and organic solids.	
II. Physical Properties	8 - 10
A. Soil separates	
B. Texture	
C. Aggregation and structure characteristics	
D. Temperature	
E. Color	
F. Moisture	
G. Pore space	
H. Bulk density	
I. Particle density	

J. Aeration

K. Drainage

L. Surface Area

M. Soil water

III. Chemical Properties 7 - 9

A. Morphology of clay

B. Chemistry of clays

C. Ionic exchange

D. Acidity, alkalinity (pH) and salinity

E. Reactions in liming and acidification

IV. Biological Properties 5 - 7

A. Soil organic matter

B. C:N

C. N transformation

D. Soil organisms

E. Sulfur transformation

V. Genesis and Classification 4 - 6

A. Profile

B. Soil forming factors

C. Soil survey methods

D. Soil survey reports

E. Soil distribution

F. Classification systems (briefly with emphasis on nomenclature and soil orders)

1. Older classification systems

2. New classification systems

VI. Soil Fertility 8 - 10

A. Nutrient availability

B. Macro and micro nutrients

C. Fertilizer sources, mfg, - availability

D. Application and placement

E. Fertilizer requirements

VII. Conservation and Management 5 - 7

A. Drainage

B. Erosion mechanisms and control

C. Irrigation

D. Land use classification

E. Manuring - plant and animal

Laboratory Topics

Suggested minimum requirements - lab exercise or field trips for each major area in lecture. Include one (1) land use selection exercise.

Possible Lab Exercise	Possible Field Trip
Texture	Structure
Structure	Color
Bulk density and pore space	Origin, Classification
Moisture	Conservation and
Temperature	Management
Ionic Exchange	
Acidity, alkalinity - pH	
Nutrient availability	
Soil O.M.	
N Transformation	

Committee for this course (1977):

R. Louis Judson, Co-chairman	Joliet Junior College
Roger C. Cruise, Co-chairman	Kishwaukee College
Carl J. McCausland	Spoon River College
Edward J. Dunphy	Lake Land College
Paul E. Curtiss	Parkland College
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BLACK HAWK COLLEGE, 503
6600 - 34th Avenue
Moline, Illinois 61265
Phone: 309-796-1311

BLACK HAWK COLLEGE EAST
P. O. Box 489
Kewanee, Illinois 61443
Phone: 309-853-3381

CARL SANDBURG COLLEGE, 518
P. O. Box 1407
Galesburg, Illinois 61401
Phone: 309-344-2518

CITY COLLEGES OF CHICAGO, 508
180 North Michigan Avenue
Chicago, Illinois 60601
Phone: 312-269-8000

CITY-WIDE COLLEGE
186 North Wabash Avenue
Chicago, Illinois 60601
Phone: 312-269-8000

KENNEDY-KING COLLEGE
6800 South Wentworth
Chicago, Illinois 60621
Phone: 312-962-3200

LOOP COLLEGE
64 East Lake Street
Chicago, Illinois 60601
Phone: 312-269-8000

MALCOLM X COLLEGE
1900 West Van Buren Street
Chicago, Illinois 60612
Phone: 312-942-3000

OLIVE-HARVEY COLLEGE
10001 South Woodlawn Avenue
Chicago, Illinois 60628
Phone: 312-568-3700

RICHARD J. DALEY COLLEGE
7500 South Pulaski Road
Chicago, Illinois 60652
Phone: 312-736-3000

HARRY S. TRUMAN COLLEGE
1145 West Wilson Avenue
Chicago, Illinois 60640
Phone: 312-878-1700

URBAN SKILLS INSTITUTE
3901 South State Street
Chicago, Illinois 60609
Phone: 312-624-7300

WILBUR WRIGHT COLLEGE
3400 North Austin Avenue
Chicago, Illinois 60634
Phone: 312 777-7900

COLLEGE OF DuPAGE, 502
Lambert Road & 22nd Street
Glen Ellyn, Illinois 60137
Phone: 312-858-2800

COLLEGE OF LAKE COUNTY, 532
19351 West Washington Street
Grayslake, Illinois 60030
Phone: 312-223-6601

DANVILLE JUNIOR COLLEGE, 507
2000 East Main Street
Danville, Illinois 61832
Phone: 217-443-1811

ELGIN COMMUNITY COLLEGE, 509
1700 Spartan Drive
Elgin, Illinois 60120
Phone: 312-697-1000

HIGHLAND COMMUNITY COLLEGE, 519
Pearl City Road
Freeport, Illinois 61032
Phone: 815-235-6121

ILLINOIS CENTRAL COLLEGE, 514
P. O. Box 2400
East Peoria, Illinois 61611
Phone: 309-694-5011

ILLINOIS EASTERN COMMUNITY COLLEGES, 529
233 East Chestnut Street
Olney, Illinois 62450
Phone: 618-393-2982

ILLINOIS EASTERN COLLEGE OF CONTINUING EDUCATION
R. R. 1
Fairfield, Illinois 62837
Phone: 618-842-3711

LINCOLN TRAIL COLLEGE
R. R. 3
Robinson, Illinois 62454
Phone: 618-544-8657

OLNEY CENTRAL COLLEGE
305 North West Street
Olney, Illinois 62450
Phone: 618-395-4351

WABASH VALLEY COLLEGE
2200 College Drive
Mt. Carmel, Illinois 62863
Phone: 815-262-8641

ILLINOIS VALLEY COMMUNITY COLLEGE, 513
R. R. 1
Oglesby, Illinois 61348
Phone: 815-224-6011

JOHN A. LOGAN COLLEGE, 530
Route 2
Carterville, Illinois 62918
Phone: 618-985-3741

JOHN WOOD COMMUNITY COLLEGE
1919 North 18th
Quincy, Illinois 62301
Phone: 217-224-6500

JOLIET JUNIOR COLLEGE, 525
1216 Houbolt Avenue
Joliet, Illinois 60436
Phone: 815-729-9020

KANKAKEE COMMUNITY COLLEGE, 520
Box 888
Kankakee, Illinois 60901
Phone: 815-933-9311

KASKASKIA COLLEGE, 501
Shattuc Road
Centralia, Illinois 62801
Phone: 618-532-1981

KISHWAUKEE COLLEGE, 523
Alt and Malta Road
Malta, Illinois 60150
Phone: 815-825-2086

LAKE LAND COLLEGE, 517
S. Route 45
Mattoon, Illinois 61938
Phone: 217-235-3131

LEWIS & CLARK COMMUNITY COLLEGE, 536
5800 Godfrey Road
Godfrey, Illinois 62035
Phone: 618-466-3411

LINCOLN LAND COMMUNITY COLLEGE, 526
Shepherd Road
Springfield, Illinois 62708
Phone: 217-529-7111

McHENRY COUNTY COLLEGE, 528
6200 Northwest Highway, Box 415
Crystal Lake, Illinois 60014
Phone: 815-455-3700

MORAINE VALLEY COMMUNITY COLLEGE, 524
10900 South 88th Avenue
Palos Hills, Illinois 60465
Phone: 312-974-4300

MORTON COLLEGE, 527
3801 South Central Avenue
Cicero, Illinois 60650
Phone: 312-656-8000

OAKTON COMMUNITY COLLEGE, 535
7900 North Nagle Avenue
Morton Grove, Illinois 60053
Phone: 312-967-5120

PARKLAND COLLEGE, 505
2400 West Bradley Street
Champaign, Illinois 61820
Phone: 217-351-2200

PRAIRIE STATE COLLEGE, 516
197th & Halsted Streets
Chicago Heights, Illinois 60411
Phone: 312-756-3110

REND LAKE COLLEGE, 521
R. F. D. #1
Ina, Illinois 62846
Phone: 618-437-5321

RICHLAND COMMUNITY COLLEGE, 537
100 North Water Street
Decatur, Illinois 62523
Phone: 217-422-6387

ROCK VALLEY COLLEGE, 511
3301 North Mulford Road
Rockford, Illinois 61101
Phone: 815-226-2000

SAUK VALLEY COLLEGE, 510
Route 1
Dixon, Illinois 61021
Phone: 815-288-5511

SHAWNEE COLLEGE, 531
Shawnee College Road
Ullin, Illinois 62992
Phone: 618-634-2242

SOUTHEASTERN ILLINOIS COLLEGE, 533
R. R. 4
Harrisburg, Illinois 62946
Phone: 618-252-4411

SPOON RIVER COLLEGE, 534
R. R. 1
Canton, Illinois 61520
Phone: 309-647-4645

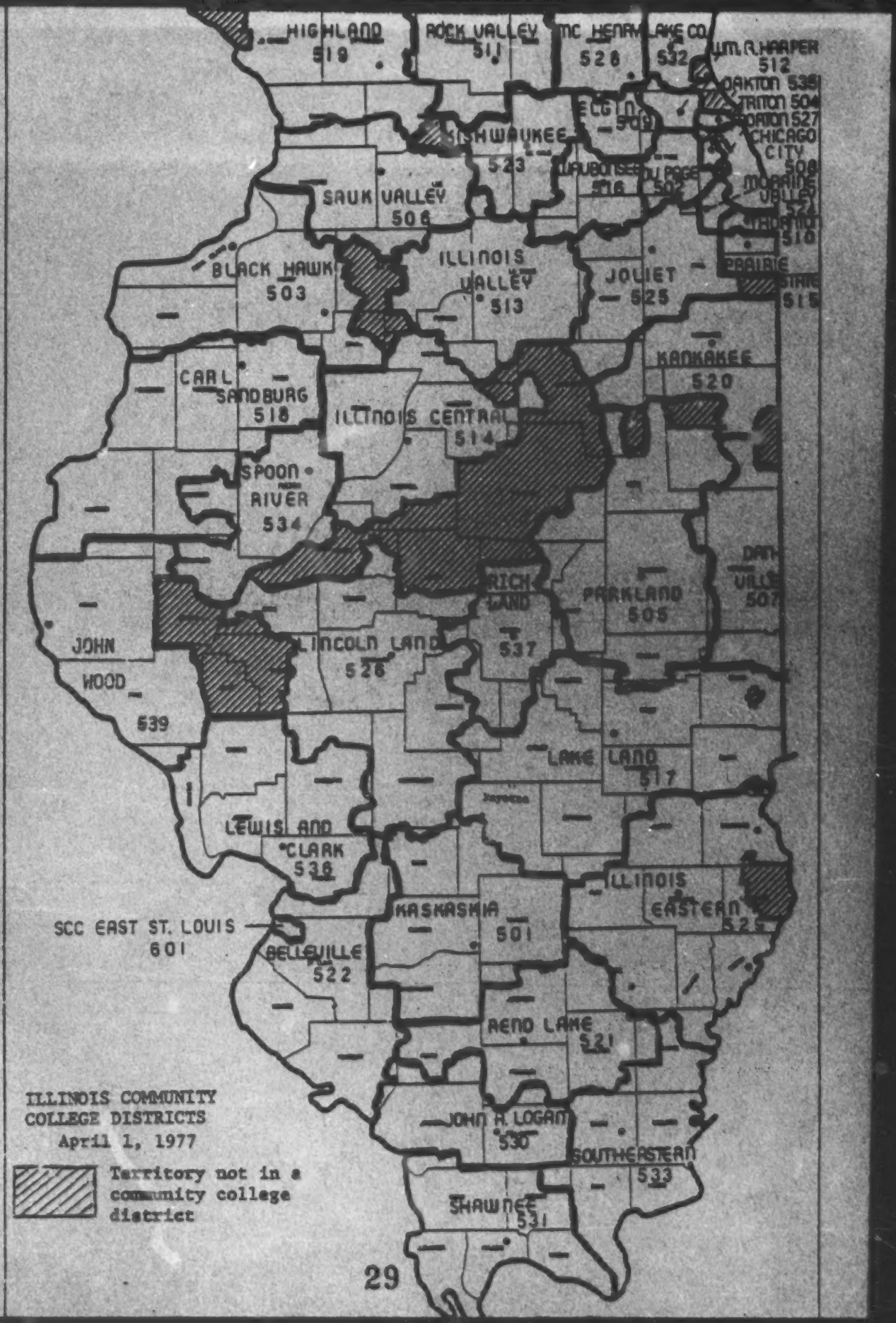
STATE COMMUNITY COLLEGE OF EAST ST. LOUIS, 601
417 Missouri Avenue
East St. Louis, Illinois 62201
Phone: 618-875-9100

THORNTON COMMUNITY COLLEGE, 510
88 West 162nd Street
South Holland, Illinois 60473
Phone: 312-596-2000

TRITON COLLEGE, 504
2000 5th Avenue
River Grove, Illinois 60171
Phone: 312-456-0300

WAUBONSEE COMMUNITY COLLEGE, 516
Route 47 at Harter Road
Sugar Grove, Illinois 60554
Phone: 312-466-4811

WILLIAM RAINEY HARPER COLLEGE, 512
Algonquin & Roselle Roads
Palatine, Illinois 60067
Phone: 312-397-3000


HIGHLAND 519
ROCK VALLEY 511
MC HENRY LAKE CO. 528 532
WM. R. HARPER 512
OAKTON 535
TRITON 504
ELGIN 509
KISHWAUKEE 523
DUPAGE 502
CHICAGO CITY 508
MORAINE VALLEY 524
SAUK VALLEY 506
THORNTON 510
BLACK HAWK 503
ILLINOIS VALLEY 513
JOLIET 525
PRAIRIE STATE 515
KANKAKEE 520
CARL SANDBURG 518
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SPOON RIVER 534
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JOHN WOOD 539
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LAKE LAND 517
LEWIS AND CLARK 536
ILLINOIS EASTERN 525
KASKASKIA 501
SCC EAST ST. LOUIS 601
BELLEVILLE 522
REND LAKE 521
JOHN A. LOGAN 530
SOUTHEASTERN 533
SHAWNEE 531
ILLINOIS COMMUNITY COLLEGE DISTRICTS
April 1, 1977
Territory not in a community college district